Space Weather Forecast

Issued on Tuesday, 15 August 2023 at 01:24 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

Space Weather Forecast Headline: Chance of G1/Minor Storm, mainly day 1 (15 Aug). Chance of isolated M-flares (R1 Blackouts).

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Low with only common class flares observed, the larges from a new relatively simple bipolar spot on the east limb. More complexity has the potential to become visible as it rotates into a less oblique viewing angle. There are a total of six numbered, and two newly developing unnumbered regions on the disc. The numbered regions include a declining region near the northwest limb, a stable mature spot approaching the southwest limb and two simple bipolar regions either side of the northern centre disc. The final numbered region is a simple spot in the southeast. There were no Earth-directed CMEs (coronal mass ejections).

Solar Wind / Geomagnetic Activity: Solar wind speeds were at background, around 320-350 km/s. Total interplanetary magnetic field (IMF) was weak, with the north-south component also varying weakly. Geomagnetic activity was Quiet (Kp 0-2)

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) persisted at background levels with no solar radiation storms occurring.

Four-Day Space Weather Forecast Summary

Solar Activity: Mainly Low activity is expected, but with a daily chance of rising to Moderate with isolated Moderate flares.

Solar Wind / Geomagnetic Activity: There are no Earth-directed CMEs. Fast winds from a northern disc coronal hole are anticipated to arrive day 1 (15 Aug), with solar winds likely rising to around 550km/s. Further enhancements are possible day 2 (16 Aug) from a further coronal hole on the southern disc, however this is low confidence. Initially Quiet geomagnetic activity is expected to become Unsettled to Active with a likelihood of G1/Minor Storm intervals day 1 (15 Aug). Activity then easing to Unsettled to Active, but with an ongoing slight chance of G1 Minor Storm intervals day 2 and 3 (16-17 Aug).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is currently forecast to persist at background levels with no solar radiation storms occurring.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	60	20	20	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	30	30	40	40
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	2	2	2	2
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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